

Influence of the structure and composition of zeolite NaX on carbon dioxide adsorption under dynamic conditions

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Abstract

Using the X-ray diffraction analysis, emission spectral analysis, low-temperature nitrogen adsorption, and electron spin resonance methods, the dynamic sorption capacity in removal of carbon dioxide from gas streams, exhibited by type NaX zeolite samples, was studied in relation to their phase and elemental compositions and crystal and pore structure characteristics. It was found that the criteria determining the capacity of the zeolite are the content of the crystalline phase, imperfection of the crystal structure as determined by the crystallite size and the amount of iron isomorphously substituting the aluminum cations in the tetrahedral sites of the zeolite, and the number of compensating sodium cations. © 2013 Pleiades Publishing, Ltd.

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